

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
14 October 2004 (14.10.2004)

PCT

(10) International Publication Number
WO 2004/088908 A1

(51) International Patent Classification⁷: **H04L 1/06**

(21) International Application Number:
PCT/GB2004/001386

(22) International Filing Date: 31 March 2004 (31.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0307471.3 1 April 2003 (01.04.2003) GB

(71) Applicant (for all designated States except US): **QINETIQ LIMITED** [GB/GB]; Registered Office, 85 Buckingham Gate, London SW1E 6PD (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DEAN, Michael** [GB/GB]; QinetiQ Limited, Malvern Technology Centre, St. Andrews Road, Malvern, Worcs WR14 3PS (GB). **FLETCHER, Paul, Nicholas** [GB/GB]; QinetiQ Limited Building, Malvern Technology Centre, St. Andrews Road, Malvern, Worcs WR14 3PS (GB). **NIX, Andrew, Robert**

[GB/GB]; University of Bristol, Merchant Venturer's Building, Woodland Road, Bristol BS8 1UB (GB). **AZIZ, Mohamad, Kamree, Abdul** [MY/GB]; University of Bristol, Merchant Venturer's Building, Woodland Road, Bristol, BS8 1UB (GB).

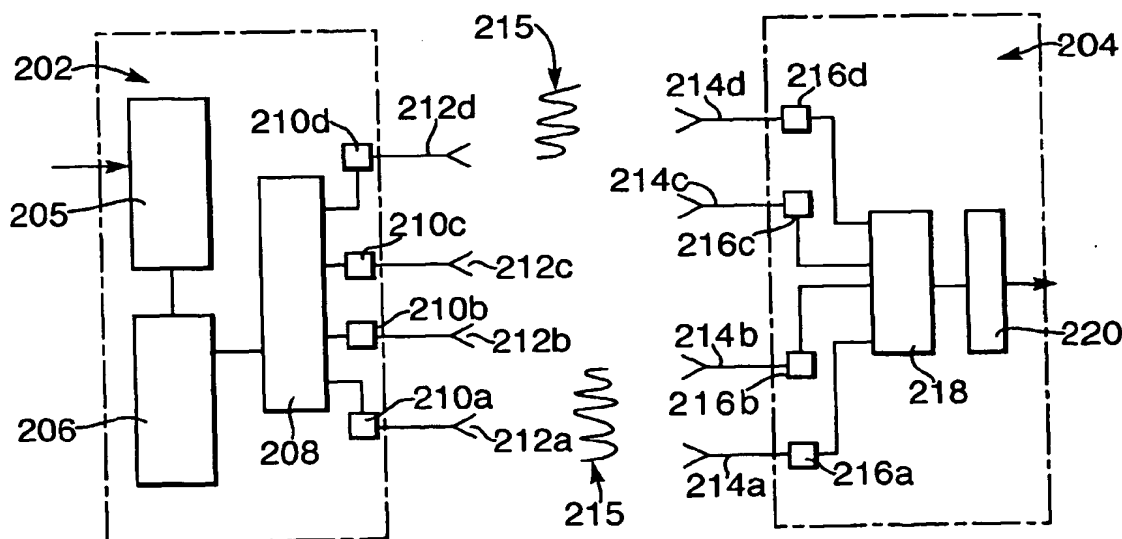
(74) Agent: **TOCHER, A., J.**; QinetiQ Ltd, IP Formalities, Cody Technology Park, A4 Building, Room G016, Ively Road, Farnborough, Hampshire GU14 0LX (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MY, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,

[Continued on next page]

(54) Title: SIGNAL PROCESSING APPARATUS AND METHOD



(57) Abstract: A signal processing apparatus (200) comprises a plurality of receive antennas (216a-m) arranged to receive a composite signal containing a plurality of transmitted symbols. A joint detector-decoder (218) iteratively enumerates most probable symbols received at the receive antennas (216am) using an enumeration constraint. A processor (220) determines a bit stream corresponding to each most probable received symbol. A method of signal processing for MIMO systems is also disclosed.



GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

Declaration under Rule 4.17:

— *of inventorship (Rule 4.17(iv)) for US only*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.